EXHIBIT A

JOSEPH L. GRANT
4201 MOSS CREEK COURT
MATTHEWS, NORTH CAROLINA 28105
PHONE 704 617 0336

June 30, 2016

Mr. Colin P. Smith
Holland & Knight, LLP
131 South Dearborn Street, Suite 3000
Chicago, Illinois 60603

Re: *Kehler v. Bridgestone Americas Tire Operations, LLC, et al.*

Dear Mr. Smith:

I am an independent tire consultant and failure analyst of tires. I have a Bachelor of Science Degree in Mechanical Engineering from Fenn College of Engineering at Cleveland State University and graduated in 1971. I was employed as a tire engineer for more than 34 years by Continental Tire North America, Inc., previously known as The General Tire & Rubber Company and Continental General Tire, Inc. From September 1988 to January of 1993, I was the Director of Commercial Tire Technology, which included all-steel truck tires similar to the all-steel truck tire involved in this matter. As part of my tire technology responsibilities involving all-steel truck tires, I headed up a technical team involving tire engineers and chemists from the United States, Germany and Japan that was responsible for developing all-steel truck tires for a joint venture (GTY Tire Company) new truck tire manufacturing facility located in Mt. Vernon, Illinois. From 1993 until my retirement at the end of 2005, I was the Director of Product Analysis, where I was responsible for the failure analysis of tires manufactured by Continental Tire North America, Inc., and also analyzed other manufacturers' tires. During my career, I had responsibilities for the design, development, testing and the forensic analysis of tires. These responsibilities included design, development and testing of tires to ensure they complied with the performance requirements of the Department of Transportation and Continental Tire as well as various vehicle manufacturers.

I am also a member of the Society of Automotive Engineers, the American Chemical Society and the American Society of Mechanical Engineers and I have represented Continental Tire at the Rubber Manufacturers Association and Tire and Rim Association.

I have been engaged as an independent consultant in the field of tire failure analysis for over fifteen (15) years for a wide variety of clients. In this regard, I have presented expert opinion testimony in cases in both federal and state courts throughout the United States. I have qualified as an expert in the field of tire failure analysis in both State and Federal Courts in California, Texas, Arizona, Florida, Maryland, North Carolina, South Carolina, Mississippi, Missouri, Georgia, Nebraska, Idaho, New York, Pennsylvania, Tennessee, Louisiana, Iowa, Oklahoma, Minnesota, Montana and Illinois. I have never been found to be unqualified as an expert in the field of tire failure analysis by any court.

On September 10, 2015, in Akron, Ohio, I personally examined the left front tire at issue and its wheel and the companion right front tire. I have also reviewed various depositions and case specific materials.

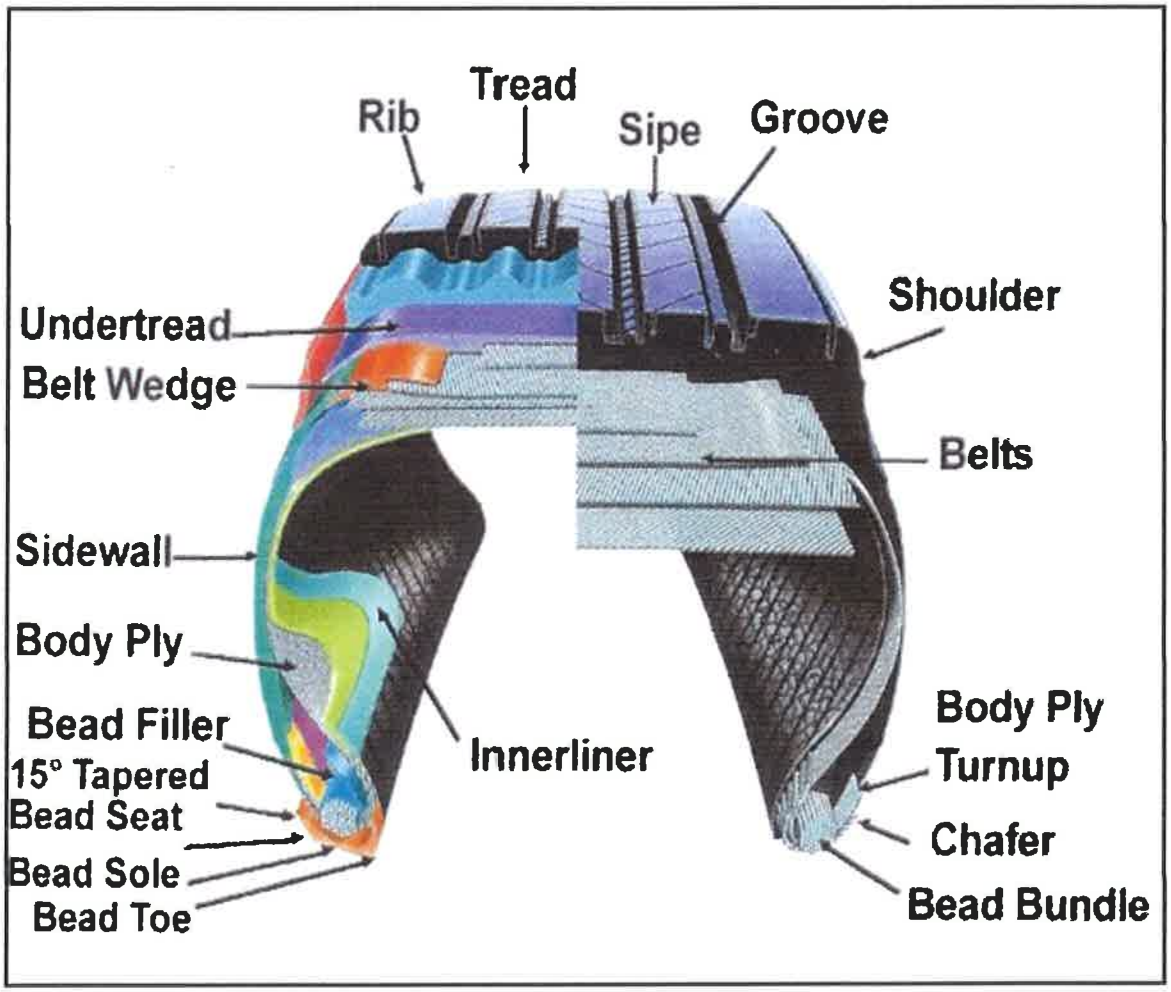
I am submitting this report pertaining to my findings, opinions and conclusions from my forensic examination of the tire at issue and its wheel, the companion tire and my review of various case-specific materials.

A. RADIAL TRUCK TIRE DISCUSSION

Radial truck tires such as the left front tire at issue and the companion tire are commonly referred to as all-steel radial truck tires. This is because the body ply reinforcement material as well as the belt reinforcement material are comprised of steel cords. The body or carcass ply is one (1) steel ply and the steel belts are typically comprised of four (4) steel belt ply layers. The inner steel belt layer closest to the steel body ply is commonly referred to as the number one (1) steel belt and is also called the transition belt. The next two (2) steel belts are the working belts and are commonly referred to as steel belts two (2) and three (3). The top steel belt that is closest to the tread is commonly referred to as the protector belt or the number four (4) steel belt.

An all-steel radial truck tire is a complex, laminate structure, typically containing twenty or more different components and a dozen or more different compounds. All-steel radial truck tires are designed to carry vehicle loads in a particular application under a wide variety of operating conditions.

All-steel radial truck tires have entirely different compounds and construction components compared to passenger and light truck tires in order to perform under high loads, high inflation pressure, severe service conditions, multiple retreads, high mileage and years of service. Because of the wide variety of vehicles and service conditions where all-steel truck tires are used, the compounds and constructions are optimized for the particular intended vehicles and service conditions such as for recreational vehicles.



ALL-STEEL RADIAL TRUCK TIRE GENERIC CUTAWAY DIAGRAM

From a tire manufacturing standpoint, all-steel radial truck tires are manufactured in different manufacturing plants or at least in segregated portions of tire plants. This is because the manufacturing equipment is extensively different compared to the equipment that is used to manufacture passenger and light truck tires. Even the curing of all-steel radial truck tires use significantly different temperatures, internal curing press pressures and much longer curing times compared to passenger and light truck tires.

Because of its complex nature, including that it is a pneumatic structure that requires compressed air, an all-steel radial truck tire can fail due to a wide variety of severe or abusive service-related conditions. Just because a tire fails or loses air does not mean a tire is defective.

B. BACKGROUND

According to the Wyoming Investigator's Crash Report, on November 8, 2014, at 2:55 pm, a 2011 Freightliner truck (VIN 1FUJGLDR6BSBA8406) driven by Brian Kehler was traveling westbound on Interstate 80 in Cheyenne, Laramie County, Wyoming. Steven Marks, Kehler's co-driver, was a passenger in the Freightliner. Around milepost 363.25, the driver's side steer tire blew out. The truck entered the eastbound lanes of travel and collided with a 2005 Chevrolet Venture (VIN 1GNDV23E25D138748) driven by Aaron Richards. The Chevrolet Venture continued eastbound for a short distance before coming to a stop facing westbound in the eastbound lanes. The Freightliner truck continued westbound in the eastbound lanes out of control and collided with a 2013 Dodge Caravan (VIN 2C4RDGCGXDR552095) in a partial head-on collision. The Dodge Caravan was being driven by James Ednie. The Freightliner truck and the Dodge Caravan came to a stop still locked together from the crash in the eastbound lanes. The speed limit at the time of the accident was 75 miles per hour.

C. EXAMINATIONS

LEFT FRONT TIRE AT ISSUE AND WHEEL

During my examination of the left front tire at issue and its wheel, I took seven (7) pages of inspection notes as well as one hundred sixty-two (162) digital photographs.

The left front tire at issue was identified by information molded on the sidewalls as follows:

BRIDGESTONE R283
295/75R22.5
LOAD RANGE: G, PR 14
MAXIMUM SINGLE LOAD: 6175 LBS @ 110 PSI COLD
MAXIMUM DUAL LOAD: 5675 LBS @ 110 PSI COLD
TUBELESS RADIAL
REGROOVABLE
TREAD: 5 PLY STEEL
SIDEWALL: 1 PLY STEEL
DOT: 2CBT3WU1314

The DOT number indicates that the left front tire was manufactured in the Morrison, Tennessee tire manufacturing facility during the 13th week of 2014.

The left front wheel was an ALCOA forged 22.5 X 8.25 inch wheel. The tire and wheel were separate for examination.

The left front tire had a majority of its tread and all four (4) steel belts detached. There was one (1) separate detached piece of tread with portions of all four (4) steel belts attached that was from the tire. There were also twenty-one (21) tires pieces that were not from the tire.

The average remaining tread groove depth was 12.5/32nds of an inch. The tread hardness measured approximately 68 Shore A. There were a few stones in the tread grooves.

Using a clock face as an approximate locating reference system with the DOT serial number at 12:00, the tread and steel belts three (3) and four (4) were detached from 7:30 on the serial side and 9:30 on the opposite serial side to 4:15 on the serial side and 6:15 on the opposite serial side.

The tread and steel belts three (3) and four (4) were partially detached from 9:30 on the opposite serial side and 7:30 on the serial side back to 6:15 on the opposite serial side and 6:30 on the serial side. The 9:30 opposite serial side ends of steel belts three (3) and four (4) were loose, bare, bent and tangled back to approximately 9:00. The opposite serial side tread shoulder rib was detached and missing over the region. There were also gouges and tears on the opposite serial side intermediate tread rib in the 8:00 to 9:00 region.

The number two (2) steel belt was detached from 9:45 on the opposite serial side and 12:15 on the serial side to 12:45 on the opposite serial side and 3:15 on the serial side. The number two (2) steel belt was partially detached on the serial side from 12:15 back to 11:30.

The number one (1) steel belt was detached from 10:30 on the opposite serial side and 11:00 on the serial side to 1:15 on the opposite serial side and 1:45 on the serial side. The number one (1) steel belt was broken at 10:30 to 11:00, approximately five (5) inches long circumferentially in the crown region. There were an additional approximately seven (7) steel cords in the number one (1) steel belt broken at 1:15.

The number two (2) steel belt cords were broken approximately six (6) inches long circumferentially in the opposite serial side tread shoulder region from 10:00 to 10:45.

There were radial splits between steel carcass cords at 11:30 and 12:45. The radial splits extended under the serial side and the opposite serial side shoulder decoupler ribs and into the sidewalls. There were also steel carcass cords broken between the two

(2) radial splits in the opposite serial side off shoulder region. The broken steel carcass cords extended from the opposite serial side shoulder to the serial side shoulder in bands and individual cords. The broken steel carcass cord ends were bent and tangled. At 12:45 in the crown region, four (4) steel carcass cords were broken. At 11:45, steel carcass cords were broken approximately 1.1 inches wide under the opposite serial side tread shoulder rib location. The opposite serial side of the broken steel cords were missing.

There were two (2) steel carcass cords broken between 12:45 and 1:00.

Radial splits were located on the innerliner on the serial side at 3:15 and 4:15.

At 11:45, the serial side shoulder decoupler rib was split open. Also at 11:45, on the opposite serial side, there was a gouge and abrasion on the decoupler rib that extended onto the opposite serial side off shoulder to the circumferential split and broken steel carcass cords from 11:30 to 12:45.

Overall, the steel belt cords and the steel carcass cords were adhered in rubber.

There was multi-level rubber tearing on all of the detached surfaces.

A localized region of multi-level separation was present on top of the number two (2) steel belt in the 9:30 to 9:45 opposite serial side region that extended to the serial side tread shoulder groove region at 11:00 to 12:00. The localized region was along the 9:45 opposite serial side to 12:15 serial side number two (2) steel belt detachment line. Multi-level radial tear lines were present on the serial side from 10:45 to 12:45 on top of the number one (1) steel belt. The serial side multi-level radial tear lines extended to the larger localized opposite serial side region.

There was one separate detached piece of tread and various portions of all four (4) steel belts that fit the tire from 11:00 on the serial side and 1:00 on the opposite serial side to 1:00 on the serial side and 3:00 on the opposite serial side for the tread and steel belts three (3) and four (4). The number two (2) steel belt on the bottom of the number three (3) steel belt fit the tire from 11:30 on the opposite serial side and 12:30 on the opposite serial side to the number three (3) and four (4) steel belt detachment line in the 1:15 to 2:00 region. The number two (2) belt was broken along the detachment line and the serial side of the broken cords were missing. At 12:30 on the opposite serial side to 1:30 on the serial side, there was also an approximate 0.7 inch wide band of the number one (1) steel belt in the bottom of the detached piece.

The steel cords in steel belts one (1), two (2), three (3) and four (4) on the detached piece were adhered in rubber.

There was multi-level rubber tearing on the bottom of the detached piece. A localized region of multi-level separation was present on the bottom of the detached piece on the bottom of the number three (3) steel belt following the 11:00 serial side to 1:00 opposite serials ide detachment line. There was also a small localized region in the 11:00 to 12:45 serial side region with multi-level radial tear lines.

There was evidence of heat damage on the components, particularly including extensive heat discoloration and bluing on the bottom of the detached tread piece.

There were rim line compression groves and erosion 360 degrees on both sides of the left front tire at issue.

The innerliner was sound. Abrasion on the innerliner was present in the 11:30 to 12:00 serial side sidewall region.

On the serial side sidewall, there were splits through the sidewall at 12:45, 8:15 and 11:30. At 11:45, there was also a split with abrasion extending to a circumferential break I the 11:30 to 12:00 region. At 12:30, there was a deep gouge on the serial side bead and at 10:30, there was a two (2) inch cut on the bead with surface cuts on the sidewall nearby.

On the opposite serial side sidewall, there were radial splits through the sidewall at 12:45 and at 11:30. The sidewall was also split open circumferentially with the steel carcass cords broken and innerliner broken in the off shoulder region from 11:30 back to 12:45. There was also abrasion on the innerliner along the break and a portion of the innerliner was detached and abraded in the region. Additionally, abrasion was visible on the opposite serial side sidewall near the 12:45 radial split.

At 11:45, on the opposite serial side off shoulder region, there was abrasion that extended onto the tread surface.

At 12:00, in the opposite serial side bead region, the bead toe was torn open approximately 1.5 inches wide exposing the steel. There was also abrasion in the region. At 1o:45, the opposite serial side bead was snag that exposed chafer material and broken steel cords.

There were no manufacturing anomalies in the left front tire that could have caused or contributed to the failure of the tire.

There were no wheel weights on the left front wheel. There were eroded and worn wheel flanges with bends. There were also abrasions on both wheel flanges with more

abrasion on the outboard flange. Additionally, the wheel was covered with a black material with a brown material underneath.

RIGHT FRONT COMPANION TIRE

During my examination of the right front companion tire, I took four (4) pages of inspection notes as well as thirty-two (32) digital photographs.

The right front companion tire at issue was identified by information molded on the sidewalls as follows:

CONTINENTAL HS L2
275/80R22.5
LOAD RANGE: G
MAXIMUM SINGLE LOAD: 6175 LBS @ 110 PSI COLD
MAXIMUM DUAL LOAD: 5675 LBS @ 110 PSI COLD
TUBELESS RADIAL
REGROOVABLE
TREAD: 5 PLY STEEL
SIDEWALL: 1 PLY STEEL
DOT: A3DF1YJ4911

The DOT number indicates that the right front companion tire was manufactured in the Mt. Vernon, Illinois tire manufacturing facility during the 49th week of 2011.

There was no rim available for examination. The opposite serial side of the tire was marked "OUTBOARD".

The average remaining tread groove depth was 11.5/32^{nds} of an inch. The tread hardness measured 68 Shore A.

There was serial side tread shoulder abrasion 360 degrees. Additionally, there was localized deep lateral abrasion on the tread in the 6:00 to 7:00 region.

Localized erosion tread wear was present on the opposite serial side of the tread shoulder groove and rib in the 12:00 to 2:00 region and 10:00 to 11:30 region.

From 2:30 to 4:00, a deep narrow cut was present on the opposite serial side intermediate tread rib and at 9:15, there was a 0.1 inch diameter deep puncture with rounded edges also on the opposite serial side intermediate tread rib. The puncture did not extend through the innerliner.

There were rim line compression groves and erosion 360 degrees on both sides of the right front companion tire.

The innerliner was sound.

I was also provided with photographs of the components taken by Brian Queiser. The photographs included twenty-six (26) images of the right front companion wheel. Those photographs show that the flanges on both sides of the right front wheel were eroded and worn.

D. TIRE CARE AND MAINTENANCE

Among other materials, I have reviewed the available maintenance records related to the tractor and its tires, the GPS and EDR data related to the speed of the vehicle, and the depositions of Chris Rodwick, Brian Kehler, Steven Marks, Ryan Mower and Robin Wright taken in the related *Gooden/Cubillos* matter and the deposition of Mr. Kehler taken in this matter. These materials provided information on the purchase and maintenance history of the Bridgestone R283 Ecopia steer tires used on the tractor, the expectations and training provided by FedEx Ground and CLR with respect to tire issues, and the attention and care taken by the operators of the tractor with respect to tire issues.

A number of significant items of information, including but not limited to the following, were derived from these materials:

1. The left front tire at issue was driven over 52,000 miles prior to the accident;

2. Kehler and Marks contradicted one another about inflation maintenance on the steer tires, rendering inconsistent testimony about both frequency and method of inflation pressure checks. Kehler, the lead driver, clearly testified that inflation checks with a gauge were infrequent -- possibly at intervals as long as three weeks to a month. Otherwise, tire checks were generally done only by the unreliable method of "thumping" tires with a "beater." The maintenance records corroborated the inadequacy of this method, showing low pressures when checked by third parties.

3. Both Kehler and his co-driver Marks failed to even target the specified placard pressure of 110 psi for the vehicle. Both aimed at lower numbers, which would only be exacerbated by the improper inflation checking.

4. Mr. Rodwick was aware of tire speed restrictions, believed the subject tire was speed restricted to 75 mph, and specifically testified that he had advised his drivers never to exceed the speed limit and never to exceed 75 mph as a maximum. Kehler admitted in his testimony to being aware that tires have speed restrictions or ratings,

but apparently made no effort to determine or respect them with respect to the Bridgestone R283 Ecopia tires in the steer positions. Similarly, Kehler and Marks both testified they were not aware of Rodwick's maximum speed admonition, and expressly admitted they often targeted higher speeds through the cruise control feature of the vehicle.

5. The GPS and EDR data provided, while limited in scope, clearly shows that the vehicle was frequently driven over the speed restriction of the tire and often for extended periods. These included numerous occasions on which the vehicle was driven at speeds at or over 80 mph.

E. CONCLUSIONS

Based upon my education, training, experience, and examination of the left front tire at issue and wheel, the companion tire and a review of the materials provided to date, I have reached the following conclusions:

1) The design of the left front tire is not defective or unreasonably dangerous. The design of the tire is consistent with those generally used in the tire industry for this application at the time it was manufactured. The tire did not contain any manufacturing condition or defect that would have been a cause of the tire failure and was appropriate for sale as a new tire product.

2) The subject tire was appropriately designed, manufactured, tested, stamped and labeled, and complied with applicable federal regulations and industry standards governing tires, including Federal Motor Vehicle Safety Standard 119. The stated purpose of these regulations is to protect the public against unreasonable risk of accidents involving motor vehicles or motor vehicle equipment including tires. These safety regulations include both performance and tire identification or labeling standards.

   The 2005 NHTSA publication "The Pneumatic Tire", Chapter 15 states that "because the major tire manufacturers have been in business for decades and have extensive research, design, development, manufacturing and quality control activities and procedures – and employ thousands of specially trained scientists, engineers and production personnel – design and manufacturing defects are extremely rare".

3) The left front tire at issue experienced a detachment of a majority of the tread and all four (4) steel belts. This condition alone does not mean the left front tire is defective. Tread and steel belt detachments occur for a variety of reasons with

the vast majority of tread and steel belt detachments (full and partial) occurring as a result of damage from in-service abuse such as overdeflected operation, cuts, punctures, improperly repaired punctures, wear into the belt structure and/or road hazard impact injuries.

The 2011 "Radial Tire Conditions Analysis Guide" was published by the Technology & Maintenance Council of the American Trucking Associations, Inc. This guide is specifically for truck tires such as the tire at issue. This guide states that the probable cause of a section of tread with loose exposed, frayed wires or pieces of tire [can we just say "a separated tread/belt fragment"], usually found along the side of the road, is heat buildup, resulting from operating with insufficient inflation pressure to carry the load. The guide also recommends performing frequent air pressure checks and pre-trip inspections. This guide also states that road hazards may result in loss of air and/or separation. To minimize road hazards, the guide recommends eliminating yard debris, review pre-trip inspection procedures, and review operating environment.

There is also a brochure titled "Bring it Home Safely...How You Can Prevent Underinflated Truck Tires", also published by The Maintenance Council of the American Trucking Associations. This brochure discusses the importance of proper inflation pressure and inflation pressure maintenance to help prevent tread and steel belt detachments.

4) The left front tire at issue experienced a detachment of a majority of the tread and all four (4) steel belts as a result of overdeflected operation and speed. Overdeflected operation is caused by overloading, underinflation or a combination of both. Additionally, excessive speed contributed to the deterioration of the tire resulting in the detachment of a majority of the tread and all four (4) steel belts.

5) The physical evidence on the left front tire and wheel consistent with overdeflected operation includes:

   a) the rim line compression grooves and erosion on both sides of the tire;
   b) the belt separation between steel belts two (2) and three (3);
   c) the lack of any manufacturing or design defect in the left front tire;
   d) the eroded and worn flanges on both sides of the left front wheel;
   e) the heat discoloration and bluing on the bottom of the detached tread piece.

As discussed in conclusion 2 above, the 2011 "Radial Tire Conditions Analysis Guide" published by the Technology & Maintenance Council of the American Trucking Associations, Inc. This guide states that the probable cause of a

section of tread with loose exposed, frayed wires or pieces of tire, usually found along the side of the road is heat buildup, resulting from operating with insufficient inflation pressure to carry the load. The guide also recommends performing frequent air pressure checks and pre-trip inspections. This same digest states that two of the probable causes of damage to the rim flange on aluminum wheels and associated bead damage including cracking are low air pressure and overloading.

I gave a presentation at the September 2004 International Tire Exposition and Conference (ITEC) pertaining to rim line compression grooves. The title of the presentation was "Rim Line Compression Grooves as an Indication of Underinflated or Overloaded Tire Operation in Radial Tires". This conference is held every two years and is one of the premier seminars for presentations and peer review of scientific tire-related research. My paper and others at the ITEC were presented to a broad spectrum of tire industry people, including tire engineers and tire chemists. The paper illustrates rim line compression grooves as a result of controlled evaluations. The paper also studied how overdeflected operation in combination with speed can increase the operating temperature of a tire especially at the belt edges.

Standards Testing Laboratories has also conducted and published three (3) research papers in 1997 and 1998 that support the technical position that rim line compression grooves develop primarily as a result of overdeflected operation. Additionally, the 2001 Northwestern Traffic Investigation Manual, Chapter 8, also discusses rim grooves as an indicator of overdeflected operation.

Rim line compression grooves are an indication of the cumulative overdeflected operation history of a tire. Overdeflected operation increases the operating temperature of the tire. Overdeflected operation, depending on the length of time and overall service conditions such as speeds to which the tire is subjected, can damage the tire, including degrading the physical properties of the rubber compounds and reducing a tire's resistance to separation especially at the belt edges.

6) The operators of the vehicle, including Mr. Kehler, did not act reasonably or meet the standard of care with respect to tire inflation maintenance. Per the depositions and various discovery materials, there was not a proper regular practice of checking the inflation pressure of the tires with a gauge at regular intervals. Additionally, the vehicle placard inflation pressure of 110 psi for the steer axle tires was not being followed. A proper routine checking of the inflation pressure of the steer axles tire would include insuring the pressures were set to the 110 psi placard recommended inflation pressure with the use of

an accurate air pressure gauge. Visual inspection of the tires to check for a low pressure tire and/or thumping a tire are not an appropriate way to insure the tires are properly inflated.

The basic design and function of tires, including that they are pneumatic devices, rely on compressed air to provide their designed load carrying capacity. The Tire and Rim Association load and inflation tables that specify the maximum load carrying capacity for each size tire are based on the volume and pounds per square inch of compressed air inside each tire. If the inflation pressure is inside a tire is set and/or maintained below the recommended operating inflation pressure, the corresponding load carrying capacity is reduced. The tire operates hotter and the tire has to work harder than a properly set and maintained operating pressure. The stresses and strains in the tire overall increase especially at the steel belt edges. Following the vehicle tire placard or owner's manual to ensure proper inflation pressure is used for the load being carried per each tire on the vehicle is required to ensure overdeflection does not occur. Additionally, as demonstrated in various technical papers, when a tire is operated underinflated, the operating temperature as well as the stresses and strains at the belt edges increases. Ref, "The Pneumatic Tire", edited by A. N. Gent and J. D. Walter, Published 2005 by NHTSA and "The Effect of Underinflation on Tire Operating Temperature", Jenny Paige, ITEC 2012.

This improper inflation maintenance was a cause of the failure of the left front tire.

7) The operators of the vehicle, including Mr. Kehler, did not act reasonably or meet the standard of care with respect to the speed at which the left front tire was operated. The speed capability of the left front tire at issue was 75 miles per hour. All commercial truck tires have a speed restriction, and this is commonly known among truck operators and those responsible for truck tire maintenance. This has been a requirement of truck tires extending back decades to bias ply truck tires. The heavy load requirements of truck tires require a speed limit to insure truck tires are not run excessively hot and can perform satisfactorily. This is also common knowledge in the trucking industry. The vehicle involved in this matter was routinely operated above 75 miles per hour, including times in excess of 85 miles per hour. These failures contributed to causing the tire failure.

8) Overdeflection and speed individually and in combination cause a tire to run hot and cause a tire disablement such as occurred in this matter.

9) There was no inadequacy or impropriety in the speed capability information Bridgestone provided for the subject tire. It was common for tire manufacturers to provide that information in the same manner used by Bridgestone and no standard or other requirement mandated any other methodology. Further, the fact that truck tires are speed restricted is well known in the trucking industry, as is illustrated by the testimony of Mr. Roderick, Mr. Kehler and Mr. Marks.

10) The left front tire also exhibits road hazard impact damage that contributed to the failure of the tire, which was already significantly damaged and weakened from overdeflected operation and excessive speed.

11) The left front tire at issue was not in a defective condition or unreasonably dangerous at the time it left Bridgestone's hands. The left front tire underwent a substantial change in its condition after it left Bridgestone. The left front tire at issue in this case failed because the tire suffered a combination of the service conditions and abuses that changed its condition substantially after it left Bridgestone.

12) The multi-level tearing and rubber tear appearance of the exposed detached surfaces of the steel belt skim and steel carcass skim rubber are evidence that the overall rubber to rubber and rubber to steel adhesion levels as well as the fatigue resistance, age resistance and physical properties, such as rubber strength and tear strength of the belt skim compound, were appropriate in the subject tire. The multi-level tearing of the rubber between the steel belts is also evidence that there was good balanced adhesion between all the various interfaces of the laminate structure. There is no physical evidence of any inadequate bonding or adhesion deficiency or premature aging of the belt skims in the subject tire. There is no evidence of insufficient antidegradents either by design or through manufacturing exceptions to counteract the degree of oxygen attack. This is based on the physical evidence on the tire. The steel cords overall are encased in rubber with the exception of a localized region in the top and bottom steel where the tire became disabled. The tire randomly tore apart in a multi-level way indicating good balanced adhesion and appropriate physical properties of the rubber. References: "Component Interfacial Tearing Appearances" by Gary Bolden and TIA 2005 - "Passenger & Light Truck Tires Conditions Manual".

13) There is no physical evidence of inadequate bonding of the belt skim of the subject tire. The multi-level tearing described above indicates good adhesion. Further, the indications described by Mr. Carlson as pattern marks are normal tear patters and are not, in any event, an indication of any adhesion issue. Technical papers that support this include: 1) "Belt Misalignments and Belt/Belt

Tear Patterns" by Harold J. Herzlich of Herzlich Consulting, Inc., ITEC 2002, 2) "Component Interfacial Tearing Appearances" by Gary Bolden, ITEC 2004, 3) "Do Liner Patterns Affect Tire Performance" by James D. Rancourt, Ph.D., ITEC 2004 and 4) "Process Marks in Disabled Tires" by Jean-Claude Brico, ITEC 2006.

14) The innerliner is not defective in the left front tire and in my experience is in line with well manufactured radial truck tires sold and used in the United States over the years. The left front tire does not have any exposed or penetrating body ply fabric. The innerliner including the innerliner thickness did not cause or contribute to the failure of the left front tire at issue.

15) There is no data or performance criterion supporting Mr. Carlson's criticism of the innerliner of the subject tire. Moreover, the suggestion that an innerliner issue could have contributed to the failure of the subject tire in less than three months without any forensic corroboration is unsupported by and contrary to recognized tire science.

16) It is not appropriate to take measurements of rubber components such as the innerliner in a tire that has been in service for an extended period of time with significant mileage and compare slight differences to a new tire specification. It is well known that rubber such as the innerliner can compress, creep and even stretch when used in service. The innerliner is still present and the air retention capability is not compromised. Tires grow slightly in service and the innerliner is exposed to various levels of compressed air, flexing and heat during its service life.

17) Further, Mr. Carlson's methodology in measuring a torn innerliner to reach a conclusion about actual gauge is contrary to industry standards, unscientific and unreliable. At locations where the tire has split, the innerliner becomes stretched and expanded. Additionally, the surface of the radial splits are rough, irregular torn surfaces thus adding additional variability.

18) The configuration of the wedge and base rubber components of the subject tire were adequate and appropriate. Increasing rubber gauges of components does not necessarily improve tire durability. Unnecessary increases in rubber gauges can actually reduce component and overall tire life. Unnecessary increases in rubber gauges of rubber components increase tire weight, increase tire operating temperature and can increase the stresses and strains in the tire. The design approach to tires is to optimize each component in the tire to obtain the required tire performance.

19) There was nothing unusual about the steel belts in the subject tire that would be of concern related to tire durability. Based on my examination of the subject tire the steel belts were in line with well-manufactured tires and did not cause any tire durability issue in the left front tire.

I have analyzed belt cord conditions on a large number of tires in my career, including tires manufactured by a variety of tire manufacturers in both new tires and worn tires. Additionally, on September 18, 2012, at the 2012 International Tire Exposition and Conference "ITEC", in Cleveland, Ohio, I presented a paper pertaining to an X-ray study of sixty (60) worn out passenger and light truck tires that I conducted. This study confirms that the belt conditions in the subject tire and the companion tires are normal and are not a concern related to durability. Additional technical papers that support this include: "Belt Misalignments and Belt/Belt Tear Patterns" ITEC 2002 and "The Effect of Snaked Belt Anomalies on Tire Durability" ITEC 2000 both by Harold J. Herzlich of Herzlich Consulting, Inc.

20) The left front tire at issue should not have been in service on the day of the accident. The persons responsible for maintaining and inspecting the left front tire at issue, including Mr. Kehler, should have taken remedial action and removed the tire at issue from service before the accident. The area over the localized region where the tire failed would have appeared distorted. An increase in noise and vibration from the tire leading up to the tire failure would also have been signals to most drivers that the tire needed to be replaced. Additionally, there was irregular erosion or river wear that would warrant removing the tire.

21) At the time of the accident, the right front tire was a different size compared to the left front tire. Different size tires should not be mixed on the same axle. This should be common knowledge among truck operators, and is another indication of improper tire maintenance and a lack of due care for tire safety.

22) In my experience, the forces generated on a vehicle from a tire failure do not normally adversely affect the dynamics of the vehicle or cause loss of control. If a loss of control does occur, it is typically related to other factors. I have instrumented many vehicles including a semi-tractor trailer during my career and measured the forces going into a vehicle during various types of tire disablements at highway speeds, including tread and top steel belt detachments such as encountered in this accident. According to the 2005 NHTSA publication "The Pneumatic Tire", Chapter 15, the statistics indicate that only a fraction of

the time, 0.06% to 0.50%, does an in-service tire failure end up with some type of crash.

23) I disagree with Mr. Carlson's defect contentions and criticisms of the subject tire contained within his report. I understand that Mr. Carlson will give a deposition in this matter and I expect to respond to the contentions and any new opinions offered at that time.

This report and the opinions expressed are based upon a reasonable degree of professional certainty, my education and work experience and on the materials presently available to me. I reserve the right to supplement or amend this report in light of newly-acquired information.

I have enclosed a copy of my current CV which includes publications, my deposition and trial testimony list, a list of case specific file materials, a list of general reference file materials, a list of "Impact Literature & Reference Materials" and a list of "Overdeflected Operation" reference materials. My hourly billing rate is currently $310 per hour as of January 1, 2016.

If you have any questions regarding my examination or opinions, please contact me.

Joseph L. Grant

Joseph L. Grant

A list of case specific materials reviewed by Joseph L. Grant as of June 30, 2016 in the *Kehler v. Bridgestone Americas Tire Operations, LLC, et al.* matter.

1) Subject Tire and Wheel;
2) Companion Tire;
3) Defendant Commercial Tire's Rule 26 Initial Disclosures Including Supplements;
4) Defendant Bridgestone Americas Tire Operations, LLC's Rule 26 Initial Disclosures Including Supplements;
5) Plaintiff's Rule 26(a) Initial Disclosures Including Supplements;
6) Plaintiff's Amended Complaint;
7) Plaintiff's Complaint;
8) Traffic Crash Report;
9) Scene Photos;
10) Defendant Bridgestone Americas Tire Operations, LLC's Response to Plaintiff's First Requests for Production;
11) Defendant Bridgestone Americas Tire Operations, LLC's Responses to Plaintiff's First Set of Interrogatories;
12) Defendant Commercial Tire's Responses to Plaintiff's First Requests for Production;
13) Defendant Commercial Tire's Responses to Plaintiff's First Set of Interrogatories;
14) Plaintiff's Responses to Defendant Bridgestone Americas Tire Operations, LLC's First Request for Production;
15) Plaintiff's Answers to Defendant Bridgestone Americas Tire Operations, LLC's First Set of Interrogatories;
16) Plaintiff's Responses to Defendant Commercial Tire's First Request for Production;
17) Plaintiff's Response to Defendant Commercial Tire' First Set of Interrogatories;
18) Plaintiff's First Supplemental Responses to Defendant Commercial Tire's First Set of Requests for Production;
19) Plaintiff's First Supplemental Response to Defendant Commercial Tire's First Set of Interrogatories;
20) Plaintiff's Second Supplemental Responses to Defendant Commercial Tire's First Set of Interrogatories;
21) Plaintiff's FRCP 26 Initial Expert Designations (including reports);
22) Plaintiff's FRCP 26 First Supplemental Expert Designations (including attachments);
23) Plaintiff's FRCP 26 Second Supplemental Expert Designations (including reports);
24) Defendant Bridgestone Americas Tire Operations, LLC's Expert Witness Disclosure (including reports);
25) Deposition Transcripts for Brian Kehler (w/ exhibits);
26) Deposition Transcript for Chris Rodwick (w/ exhibits);

27) Deposition Transcript for Ryan Mower (w/ exhibits);
28) Deposition Transcript for Steve Marks (w/ exhibits);
29) Deposition Transcript for Robin Wright (w/ exhibits);
30) Deposition Transcript for James Kiriazes (w/ exhibits);
31) Deposition Transcript for Paul Bernstorf (w/ exhibits);
32) Deposition Transcript for Alan Bauman (w/ exhibits);
33) Deposition Transcript for Joshua Byrd (w/ exhibits);
34) Deposition Transcript for Michael Sear (w/ exhibits);
35) Deposition Transcripts for David Johnson (w/ exhibits);
36) Deposition Transcripts for Brian Queiser (w/ exhibits);
37) Tire Specifications;
38) Adjustment Data;
39) Claim and Lawsuit Data;
40) Production Data;
41) Prototype Design Review and Developmental Design Review for 295/75R22.5 Bridgestone R283 Load Range G Tires;
42) Development Testing;
43) HTBRA Testing;
44) UTBR Testing;
45) Standard Practices;
46) Development Documents;
47) Innerliner Design Review;
48) Statement of the Butyl Content of the Innerliner;
49) FMVSS Requirements;
50) Tire Maintenance and Safety Literature;
51) Tire & Rim Association Provisions;
52) Truck Tire Limited Warranty and Safety Manual;
53) Bridgestone Truck Tire Data Book;
54) Bridgestone Steer Tire Failure Testing;
55) Video "The Critical Factor–Michelin Tire Co. Video (1987)";
56) FedEx Unit Photos/Videos, SCOTT, Bates Nos. 1570002831;
57) Scott, John - 15.04.07 Photos/Videos, Bates Nos. 1570002865;
58) Queiser Photographs of the Subject Tire and Wheel and Companion Tire and Wheel;
59) Utah Commercial Driver License Handbook;
60) X-Rays of Subject Tire.

CURRICULUM VITAE OF JOSEPH L. GRANT

PRESENT EMPLOYMENT: Independent Tire Analyst

HOME ADDRESS: 4201 Moss Creek Court
Matthews, North Carolina 28105
Phone 704 617 0336

EDUCATION: Bachelor of Science in Mechanical Engineering – June, 1971
Fenn College of Engineering, Cleveland State University

COURSES & SEMINARS:

- Tire Society Symposium
- Akron Rubber Group
- Clemson University Tire Industry Conference (October, 1985 and 1986)
- Monsanto Rubber Technology Seminar (May, 1989)
- SAE Motor Vehicle Accident Reconstruction and Cause Analysis (March, 1993)
- International Tire Exposition and Conference
- Northwestern University Traffic Institute Accident Investigation (March, 1997)
- STL Trans Tech Tire Technology Seminar – 1999

PROFESSIONAL ORGANIZATIONS:

- Society of Automotive Engineers
- Akron Rubber Group
- Rubber Manufacturers' Association
  Chairman - Truck Bus Tire
  Engineering Committee (1986-1992)
- Tire & Rim Association
- The Maintenance Council of the American Trucking Association
- American Society of Mechanical Engineers
- Tire Industry Association
- American Chemical Society

PUBLICATIONS:

"What makes a High Performance Tire Different than a Regular Tire"
Jan. 1986 - Akron Rubber Group
Oct. 1986 - Clemson University Tire Industry Conference
April 1987 - American Retreading Association

"Rim Line Grooves as an Indicator of Underinflated or Overloaded Tire Operation in Radial Tires"
September 2004 – ITEC

"X-Ray Study of Sixty (60) Worn Out Passenger & Light Truck Tires"
September 2012 - ITEC

PATENTS: Method of Forming Belted Radial Tires from a Cylindrical Tire Band (1977)

CURRICULUM VITAE OF JOSEPH L. GRANT

EMPLOYMENT:

· June 1971 – Dec. 1994	The General Tire & Rubber Company
· Jan., 1995 – April 2000	Continental General Tire, Inc.
· May 2000 – Dec. 2005	Continental Tire, North America, Inc.
· Jan. 2006 – Present	Independent Tire Analyst

POSITIONS:

- June, 1971 — Engineering Trainee, Tire Technology Department, Akron Tire Manufacturing Plant (Akron, Ohio).

- October, 1972 — Project Engineer, Advanced Tire Development. Responsible for the Development of Advanced Concept Tire Products, including Fiberglass Belted Radial Passenger Tires and Advanced Bias Truck Tires (Akron, Ohio).

- October, 1978 — Manager, Bias Passenger Car Tire Engineering Technology. Responsible for the Engineering Development Group for Bias Passenger Tires (Akron, Ohio)

- April, 1980 — Manager, Replacement and Private Brand Passenger Car Tire Engineering Technology. Responsible for the Engineering Development Group for Bias and Radial Passenger Tires (Akron, Ohio).

- March, 1987 — Section Manager, Radial Truck Tire Engineering. Responsible for the Engineering (Construction and Mold Design) Development Group for Radial Truck Tires (Akron, Ohio).

- September, 1988 — Director, Commercial Tire Technology. Responsible for the Engineering (Construction and Mold Design) and Compound Development Groups for Commercial Products, including Bias and Radial Medium and Heavy Service Truck Tires and Giant, Farm and Industrial Tires (Akron, Ohio, September 1988 - March 1992) (Mt. Vernon, Illinois, April 1992 - December 1992).

- January, 1993 — Director, Product Analysis. Responsible as company-wide consultant to assist other Departments on the subject of Tire Failure Analysis, Tire Performance Standards, and Safety Literature (Akron, Ohio, January 1993 - October, 1995) (Charlotte, North Carolina, November 1995 – January 2006).

- January, 2006 — Independent Tire Analyst

JOSEPH L. GRANT
DEPOSITION AND TRIAL LIST

NAME	VENUE	TRIAL	DEPO	LOCATION
Aguilar vs. Tricor	Superior Court of the State of CA. San Diego, Central Case NO. 37-2012-00086554-CU-PA-CTL	-	14	San Diego, CA
Alexander v. Dunlop	NY, Sup Court of State of NY, County of Broome, No.:2668/04	12	-	Binghamton
Allen, Kimberly v Michelin	Arizona Mohave County Superior Court, Case No. CV2013-07176	15	15	Charlotte, NC Lake Havasu, AZ
Baxter vs. Bridgestone	Superior Court of the State of California, County of Tehama CASE No. 65202	-	13	Charlotte, NC
Biggers v Continental	53rd Judicial District, Travis County, Texas	-	14	Charlotte, NC
Brennan v. Ford	MT, Cascade Co. ADV-06-1218	12		Great Falls, MT
Brown v Hankook	US District Court of Eastern District of OK, No. 6:14-cv-00109-RAW	-	15	Tulsa, OK
Cail, Danny vs Bridgestone	Circuit Court, Russell County, Alabama, Civil Action No. CV-2014-900080.00	-	16	Akron, Ohio
Charcalla, Brenda v. Goodyear	US District Court, Western District of Pennsylvania Civil Action No.: 13-cv-00200204-JFC	-	15	Charlotte, NC
Contessa, Nicholas v Michelin	Lee County, Florida Case No.: 10-CA-004573	-	13	Greenville, SC
Corral, Jose v FMC & MNA	US Dist Court, Orlando FL 6:11-cv-00706-Orl-31KRS	-	12	Charlotte, NC
Demas v Nissan	Cook County, Illinois Case No. 09 L 013814	-	14	Greenville, SC
Dos Santos v GM, YRC	US District Southern District of AL Case No.: 1:13-cv-00136		14	Charlotte, NC
Dukes v Michelin et al.	19th Judicial Circuit Court, St. Lucie, Florida Case No. 12-CA-002094	-	16	Charlotte, NC
Fleming v. Cumbee Tire Service	State of South Carolina CA No.: 2010-CP-45-470	-	12	Charleston, SC
Ganther v. Cooper Tire	State of CA, LA Case No. RIC521833		13	Los Angeles, CA
Garcia, Narciso vs. Bridgestone	Superior Court of Fulton County, State of GA CA No. 2006-CV-124449	-	12	Akron, Ohio
Gooden v BATO, et al	Wyoming US District Court CA No. 15-cv-50	-	16	Akron, Ohio
Goodwin, Vanessa and Nolan vs. Cooper	US Southern District of Mississippi	-	12	Birmingham, AL

NAME	VENUE	TRIAL	DEPO	LOCATION
	No. 1:09-CV-704			
Gonzalez, Irma v. Bridgestone/Firestone	CA, County of Stanislaus Case No. 382751	-	12	Redwood City, CAL
Haines vs. Great West Casualty Company	State Court of Hall County, Georgia File No. 2011SV670N	-	12	Atlanta, GA
Hageman vs. Sheridan	District Court of Platte County, Nebraska Case NO. CI 14-204	-	15	Charlotte, NC
Hartsock v. Goodyear Dunlop	US District Court, South Carolina Charleston Div. Case No.:2:13-cv-00419-PMD	-	15	Charlotte, NC
Hernandez v Goodyear & Sears	US District Court Western District of Texas San Antonio Division CA NO. SA-12-CV-0543-HH	-	13	Charlotte, NC
Hofmann vs. Enterprise	State of Minnesota, Fourth Judicial District Court No. 27-CV-13-1995	-	16	Pittsburgh, PA
Holt v Goodyear	Superior Court of Arizona No. CV2013-004191	-	15	Los Angeles, CA
Jackson v MNA	Cause No. 10,603 287th Judicial District Court, Parmer County, TX	-	16	Austin, TX
Jimenez, et al v. Con-Way Truckload	Nueces County Court, Texas Cause No. 2014-CCV-61239-1	-	16	San Antonio, TX
Johnson, Veronica v. Hankook	MISS. US D C Northern Dis. Of Miss. CA No. 2:09cv113-MPM-DAS	-	12	Charlotte, NC
Lacroix v Cooper	Fifteenth Judicial Court, Palm Beach County, Florida Case No.: 2013 CA 524 AO	-	15	Charlotte, NC
Liljeberg v Continental	Circuit Court, Montgomery, AL No. 03-CV-2011-900647.00	-	14	Charlotte, NC
Lowry v MNA	GA, State Court of Clayton County, NO.2009CV08351C	-	12	Charlotte, NC
Mahe, Felipe v. CTA	US Dist Court Central Dist. Of CA-Western Div Case No. ED CV 10-01744 DSF		12	Los Angeles, CA
Malik, Raheel v Cooper	US District Court, NJ Civil Action No. 2:10-cv-06371	-	14	Houston, Texas
McCoy vs California Dept of Transportation	Superior Court of the State of CA. Ventura County Case No. 56-2014-	-	16	Oxnard, CA

NAME	VENUE	TRIAL	DEPO	LOCATION
	00461883-CU-PO-VTA			
Medina vs. Michelin et al.	District Court of Dallas County, Texas, 134th Judicial District	-	16	Austin, TX
Michelin Tire Litigation	State Court Dekalb County GA CA No. 11A40143-1	-	13	Charlotte, NC
McMillian v Effinger, et al.	Circuit Court, Montgomery County, AL CANo. 03-CV-2011-001095	-	13	Charlotte, NC
Muszynski vs. Cooper	Eighteenth Judicial Circuit, Seminole County, Floridaa Case No. 11-CA-2755-10-K	-	15	Charlotte, NC
Ochoa Garcia v. Goodyear	State of Arizona County of Maricopa No. CV2008-010454	-	13	Charlotte, NC
Ortiz vs. YRC	Orange Co, Cal. State Ct Case No. 30-2010-00408867	-	12	San Diego, CAL
Padilla vs. Cooper	California Judicial Council Coordination Case No. CIVBS1000181	-	14	Los Angeles, CAL
Parker, Tracey vs. CTA	FL Circuit Court of the 15th Judicial Circuit. Palm Beach County 2009 CA 044048 XXXX MB (AF)	13 14	12& 13(3)	Charlotte, NC Miami, FL
Paz v Goodyear	Superior Court of State of Cal. Conty of LA No. BC512911	-	15(2)	Los Angeles, CAL.
Perez, Branden v. Cooper et al	State of California, Riverside County CA No. INC092252	-	12	Los Angeles, CAL
Perry vs. Cooper Tire	15th Judicial Circuit in and for Palm Beach County, Florida CASE NO. 2012CA013039XXXXMB AA	-	14	Charlotte, NC
Pfeiffer, Paula vs Bridgestone Retail	Circuit Court First Judicial Circuit, Santa Rosa County, Florida Case No.: 2014-CA-000067	-	16	Akron, Ohio
Poe vs. Harley Davidson	Tennessee, Knox County NO. L-16775	-	12	Charlotte, NC
Reed vs. U-Haul	US District Court Western District of OK No. 5:11-cv-1439-HE	-	13	Charlotte, NC
Reynosa v. Pacific Ag Rentals, et al.	State of Cal., Fresno Co. Central Division Case No.: 11CECG00711	-	12	Los Angeles, CAL
Robinson v Hankook	AL, C. C. of Talladega No: CV-08-900216	-	12	Charlotte, NC

NAME	VENUE	TRIAL	DEPO	LOCATION
Rodriguez, Jesus Vidal v Bridgestone	Sixth Circuit Court for Davidson County, Tenn. Nashville Case No. 01C-315	13	-	Nashville, Tenn.
Sallee v Ford	Circuit Court Montgomery CV-2012-901515	-	14	Birmingham, AL
Severino v Lazy Dau's RV Center & Goodyear	Circuit Court for the Thirteenth Judicial Circuit in and for Hillsborough County, Florida Case No; 12-CA-017948	-	15, 16	Charlotte, NC
Shiver, Frank v Bridgestone	US District Court Middle District of Florida Case No.:3:11-CV-01256-HLA-JBT	-	13	Akron, OH
Silver v. TBC Retail Group	NC	-	13	Raleigh, NC
Sleight v Rusty's	Second Judicial District Court of Weber County Ogden Department, State of Utah Case No. 110905721	-	15	Charlotte, NC
Solis/Corrella v. Bridgestone	USDC, Arizona No. 4:10-cv-484-TUC-DCB	-	12	Akron, OH
Taylor v. Michelin, GM	Superior Court of the State of AZ Maricopa County CV2011-014149	-	13	Charlotte, NC
Thompson v. Michelin	Circuit Court Mobile, AL. 02-CV-2011-900950.00	-	13	Atlanta, GA
Troya vs. FORD MOTOR COMPANY	Superior Court of the State of California, LA County CASE NO. BC473963	14	14	Costa Mesa, CA
Valdez v MNA	District Court Hidalgo County, TX CAUSE NO. C-0869-13-B	-	15	Austin, Texas
Vang, Pe Chi-A v. Cooper	Minnesota, District Court 27-CV-10-13554	12 & 15 Hearing	12	Birmingham, AL Minneapolis, MN
Villanueva v Ford	Superior Court of the State of California, LA County Case No.: S-1500-CV-269246, DRL	-	13	Los Angeles, CA
Westfield Ins v BATO	US District Court Northern District of WV, Clarksburg Division Case No. 1:14-cv-00055-IMK	-	15	Akron, Ohio
Williams v. Continental	C C for Balt. City, MD Case No. 24-C-10-005762	-	12	Charlotte, NC

JOSEPH L. GRANT GENERAL REFERENCE LIST of MATERIALS

OVER MY CAREER, AS PART OF MY TRAINING AND EXPERIENCE, I HAVE REVIEWED AN EXTENSIVE NUMBER OF PUBLICATIONS, TEST RESULTS, ARTICLES AND VARIOUS OTHER LITERATURES RELATED TO TIRE PERFORMANCE ISSUES. THE LIST BELOW IDENTIFIES A SAMPLE OF THE MATERIALS THAT I HAVE BEEN EXPOSED TO AND REVIEWED. THE ACTUAL EXTENSIVE LIBRARY OF MATERIALS THAT I HAVE BEEN EXPOSED TO AND REVIEWED IS FAR GREATER THAN THIS LIST

1. The Tire and Rim Association Yearbooks & Materials
2. Bennett Garfield, Who Makes it? And Where? Directory (Annual)
3. Bennett Garfield, OE Tire Size Guide (Annual)
4. Bennett Garfield, Tire Guide (Annual)
5. Bennett Garfield, Tread Design Guide (Annual)
6. The Tire Technology Conference, October 28-29, 1986, Clemson University - What Makes a High Performance Tire Different Than a Regular Tire?
7. RMA Poster - Inspection Standards for Radial Passenger Tire Casings
8. The Maintenance Council (TMC) - Recommended Maintenance Practices Manual
9. "Radial Tire Conditions Analysis Guide, A Comprehensive Review of Tread Wear and Tire Conditions" 2011, TMC ATA
10. "Radial Tire & Disc Wheel Conditions Digest" 2012, TMC ATA
11. "Radial Tire & Disc Wheel Conditions Service Manual" 2007, TMC ATA
12. "Bring It Home Safely...How You Can Prevent Underinflated Truck tires" TMC ATA
13. ASTM Designation: E 860 - 82 (Reapproved 1991) - Standard Practice for Examining and Testing Items That Are Or May Become Involved In Products Liability Litigation
14. Tire Examination Following Accidents, Topic 825 of the *Traffic-Accident Investigation Manual*
15. ARA Module 1: Basic Tire Construction
16. Pamphlet re: A Look Inside re: size designations, types of tires, common ingredients, and advantages & disadvantages
17. ITEC 1994, Paper #14A/B - Tire Dynamic Properties in the 90's: Making Vehicles Perform
18. SAE Technical Paper Series, 820814 - The Distribution of the Inflation Forces on the Structural Members of a Radial Tire
19. "Engineering with Rubber, How to Design Rubber Components", Edited by Alan N. Gent, 1992, Rubber Division of the American Chemical Society.
20. "Rubber Technology" by Morton
21. SAE SP-729, Heavy Duty Truck Tire Engineering, Thomas L. Ford and Fred S. Charles, 1988
22. SAE Paper "The Magic of the Drag Tire" 942484;

23. Mechanics of Pneumatic Tires, US Department of Transportation, National Highway Traffic Safety Administration, Samuel K. Clark
24. The Vanderbilt Rubber Handbook, Thirteenth Edition, R.T. Vanderbilt Co. 1990
25. Materials Science in Engineering
26. Vulcanization and Vulcanizing Agents
27. The Essential Rubber Handbook, David Cooper
28. Fundamentals of Vehicle Dynamics, SAE, Thomas D. Gillespie, 1992
29. Motor Truck Engineering Handbook
30. Tires, Suspension and Handling, Second Edition, John Dixon, 1996
31. Understanding How Components Fail, Donald J. Wulpi, 1987
32. Scanning Electron Microscopy and X-Ray Microanalysis, Third Edition, 2003
33. The Racing & High Performance Tire, SAE, Paul Haney, 2003
34. RMA Tire Information Service Bulletin, August 1986, Vol. 10 / No. 3 - RMA Snow Tire Definition for Passenger and Light Truck (LT) Tires
35. RMA Tire Information Service Bulletin, September 1999, Vol. 38 / No. 1 - Replacement Tires for Light Truck-Type Vehicles
36. "Tire Inflation Pressure and Temperature" - independent research
37. NHTSA, DOT §575.104 - Uniform Tire Quality Grading Standards
38. NHTSA, DOT §571.109 - Standard No. 109; New pneumatic tires
39. NHTSA, DOT §571.110 - Standard No. 110; Tire selection and rims
40. NHTSA, DOT §571.119 - Standard No. 119; New pneumatic tire for vehicles other than passenger cars
41. NHTSA, DOT §571.120 - Standard No. 120; Tire selection and rims other than passenger car tires
42. 49 CFR Ch. V, Part 570 - Vehicle in Use Inspection Standards
43. NHTSA, DOT §569 - Part 569 - Regrooved Tires
44. SAE J1561, Feb. 2001 - Surface Vehicle Recommended Practice, (R) Laboratory Speed Test Procedure for Passenger Car Tires
45. Regulation No. 30 - Uniform Provisions Concerning the Approval of Pneumatic Tyres [sic] for Motor Vehicles and Their Trailers
46. RMA Tire Care and Safety Guide (6/01)
47. RMA Motorist's Tire Care and Safety Guide (1/94)
48. Car & Travel, March 2000 - Add 10,000 Miles to Your Tires
49. Michelin Web Site - Lesson 5: Tire Safety Guidelines
50. Michelin - Passenger & Light Truck Tire Owner's Manual & Limited Warranty
51. Car Care Council, Spring/Summer 1999 - Is Your Vehicle Ready for Vacation?
52. Dr. Traffic, September 24, 2000 - Treat your tires like good friends
53. AAA Go Magazine, March/April 2000 - Never Tire of Learning About Tires
54. Owner Operator, Nov/Dec 1989 - For Safety's Sake, Protecting yourself from a blowout
55. Tire Industry Safety Council - New Consumer Tire Guide (9/82)
56. Tire Industry Safety Council - Consumer Tire Guide (4/77, 2/78)

57. RMA – Care and Service of Automobile and Light Truck Tires (8/87)
58. Tire Industry Safety Council – Recreational Vehicle Consumer Tire Guide, 1985
59. RMA Care and Service of Automobile Tires With Special Recreational Vehicle Tire Section (1/77)
60. Tire Industry Safety Council – Consumer Tire Guide, 1973
61. Tire Industry Safety Council – Recreational Vehicle Consumer Tire Guide, 1973
62. Shell – Smart Car Care, Tips for keeping your vehicle safe and on the road.
63. BFS – Inflate. Rotate. Evaluate. How to maintain your tires (10/00)
64. General Motors – Tire Safety. What GM does; what you can do
65. General Motors – Tire Performance Criteria
66. RMA – Care and Service of Automobile and Light Truck Tires (9/95)
67. RMA – Tire Information Service Bulletin, September 1999, Vol. 3, No. 2 – Tire Explosions
68. RMA Poster – Demounting and Mounting Procedures for Automobile and Light Truck (LT) Tires That Are Used on Single Piece Rims (7/95)
69. RMA Tire Publications Catalog
70. RMA Tire Publications Order Form
71. Ford Explorer Owner Guide
72. Texas Drivers Handbook
73. The New York Times, December 14, 2001 – America's Tires: Worn Down, Overlooked and Underinflated
74. CNN.com Web Site, August 29, 2001 – Study: Underinflated tires a widespread hazard
75. DOT Web Site – NHTSA 46-01 – Many U.S. Passenger Vehicles Are Driven on Under-inflated Tires, NHTSA Research Survey Shows
76. USDOT, August 2001, DOT HS 809 317 – Research Note, Tire Pressure Special Study Vehicle Observation Data
77. USDOT – Tire Pressure Special Study, Data Documentation
78. USDOT, August 2001, DOT HS 809 316 – Research Note, Tire Pressure Special Study: Methodology
79. USDOT, August 2001, DOT HS 809 316 – Research Note, Tire Pressure Special Study: Interview Data
80. USDOT, August 3, 2001, Memorandum – Subject: Preliminary Analysis of Findings, 2001 NASS Tire Pressure Special Study
81. NCSA, May 4, 2001 – Preliminary Analysis of Findings – 2001 NASS Tire Pressure Study
82. RMA Web Site – Tire Safety / Tire maintenance & Safety / Tire and Auto Safety Facts
83. Tire Business, April 29, 2002 – RMA kicks off 'tire safety week'
84. National Tire Safety Week, April 29-May 3, 2002
85. Consumer Tire Maintenance and Safety Awareness Research in the Southwest – A Report to: RMA, June 2001

86. Frederick polls – Poll Summary U.S. Overview
87. RMA "Be Tire Smart, Play Your Part"
88. Frederick polls – Poll Results Among Adult Drivers Nation wide
89. Compression Grooving as an Indicator of Over-Deflected Operating Conditions in Tires, Standards Testing Laboratories, Inc., Schnuth, Fuller, Follen, Gold, June 1997
90. Compression Grooving and Rim Flange Abrasion as Indicators of Over-Deflected Operating Conditions in Tires, Standards Testing Laboratories, Inc., Schnuth, Fuller, Follen, Gold, Smith, October 1997
91. Effects of Over-Deflection on the Tire/Rim Interface, Standards Testing Laboratories, Inc., Schnuth, Smith, Bolden, Flood, September1998
92. Tire Safety Survey, March 22, 1999
93. TMC – Tire Repair Failure Analysis
94. Videos – Tech: RT-3, C – Tube Repair, H – 2 Piece Repair, B – 250 & 251 Uni-Seal Repair, I – Radial Seal Repair; Tech Tire Repair Video, POWS 8274, and Tech International/Sears 2000, Uni-Seal Ultra Repairs RT-7
95. Tire Business, October 28, 1996 – Pull the plugs, lawyer urges
96. Tire Business, November 11, 1996 – If outside-in plug repairs unsafe, then why are they still on market?
97. RMA Poster – Puncture Repair Procedures for Automobile Tires
98. RMA Poster – Puncture Repair Procedures for Automobile and Light Truck Tires
99. RMA Poster – Truck Tire Puncture Repair Procedures, 1995
100. RMA Retreading & Repairing Shop Bulletins Index
101. Technically Speaking, November 1, 1995, Vol 17 /Issue 1 – Upper Sidewall Over Buff
102. Tech Tire Repairs – Two-Piece Radial Repair Method Instructions
103. Tire Technology International 2001, The Annual Review of Tire Materials and Tire Manufacturing Technology
104. Road Hazard Impact Test for Wheel and Tire Assemblies (Passenger Car, Light Truck, and Multipurpose Vehicles), SAE J1981, June 1994
105. SAE 940534 – Development of the SAE J1981 Road Hazard Impact Test for Wheel and Tire Assemblies
106. RMA Tire Information Service Bulletin, July 1985, Vol. 23/No. 4 – Tire Storage Recommendations
107. ITRA Journal, October 2001, Vol. 45, Issue 10 – How Much is Too Much Cracking?
108. RMA Comments, September 6, 2001 – Notice of Proposed Rulemaking FMVSS: Tire Pressure Monitoring Systems; Controls and Displays
109. USDOT, OSHA 3086 – Servicing Single-Piece and Multi-Piece Rim Wheels
110. RMA Poster – Demounting and Mounting Procedures for Automobile and Light Truck (LT) Tires That Are Used on Single-Piece Rims
111. RMA Care and Service of Truck and Light Truck Tires (1998)
112. RMA Poster – Replacement Guide for Passenger Car Tires

113. RMA Replacement Guide for Passenger Car Tires
114. RMA Statement re: Nylon Cap Plies
115. Michelin – A Guide to Speed Ratings
116. Standing Wave Pattern Information
117. United States Patent, Poque 4,724881 Pneumatic Vehicle Tire
118. Goodyear Web Site – Announcements: Talking Points/Messages Proactive Tire Replacement for some LR-E tires Specific to 15 Passenger Vans
119. Goodyear Web Site – Goodyear Responds to Set Record Straight On Misleading Reports
120. Goodyear Web Site – Load Range E Tire Background Information
121. Goodyear Web Site – Dear Goodyear Customer (November, 2000)
122. Goodyear Pamphlet "*The Complete Tire Safety Guide*"
123. RMA Tire Information Service Bulletin, June 1989, Vol. 25/No. 4 – Speed Ratings for Passenger Car Tires
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